Colour Television **Chassis**

TPS1.0E

LA

Service
Service
Service

15PFL4122/93
19PFL4322/93
20PFL4122/93

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Service Manual

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PHILIPS

1.Technical Specifications,Connections,and Chassis Overview

Index of this chapter:
1.1 Technical Specifications
1.2 Connections
1.3 Chassis Overview

Notes:
Figures below can deviate slightly from the actual situation, due to the different set executions.
Specifications are indicative (subject to change)

1.1 Technical Specifications

1.1.1 Technical Specifications

Panel	: LCD
Display area(mm)	: 304.128(H) X 228.096(V) (15") 410.4 mm X 256.5 mm (19") 408 mm X 306 mm (20")
Number of Pixels	: 1024(H) x 768(V) (15") 1440(H) x 900(V)(19") 640(H) x480(V) (20")
Pitch (mm)	: 0.29(H) x 0.29(V) (15") 0.285(H) x 0.285 mm(V) (19") 0.6375(H) x 0.6375(V) (20")
Display operating mode	: Normally black (15",20") Normally White (19")
Color depth	: 16.7M colors (8 bits) (15") 16.2M colors (19") 16.7M colors (8 bits) (20")
Brightness (cd/m^2)	: 250(Center 1 points, Typ.) (15") 300(Center 1 points, Typ.) Min : 230 (19") 450(Center 1 points, Typ.) (20")
Viewing angle(CR>10)	: Viewing angle free 70/70/70/60(R/L/U/D) (15") Viewing angle free (R/L 85/85 (Typ.) ,U/D 80/80(Typ.)) (19") Viewing angle free (R/L 178(Typ.) ,U/D 178(Typ.)) (20")
Surface treatment	: Hard coating 3H (15",19",20")
Electrical interface	: LVDS (15",19") TTL (20")
Response Time	: 8ms (Gray to Gray) (15") 5ms (Typ) (19") 12ms (Gray to Gray) (20")
Contrast ratio	: Typical 700 : 1 (15") Typical 850 : 1 Min : 500 (19") Typical 800 : 1 (20")
Outline Dimension	: 326.5 mm(H) x 253.5mm(V) x 14.4(D) mm (Typ.) (15") 427.2 mm(H) x 277.4 mm(V) x 17.0(D) mm (Typ.) (19") 432 mm(H) x 331.5mm(V) x 25.0(D) mm (Typ.) (20")
Module weight (g)	: 1350(Typ.) (15") 2500g(Typ.) (19") 3500g(Typ.) (20")
Backlight	: 2 CCFL (15") 4 CCFL (19") 6 CCFL (20")

Allowed signal mode specified

For 15PFL4122/10
PC timing table

Mode	Resolution	H. freq. / V. freq	Standard
1	640 x 480	31.469Khz/59.940Hz	VGA
2	800 x 600	35.156Khz/56.250Hz	VESA
3	800 x 600	37.879Khz/60.317Hz	VESA
4	1024 x 768	48.363Khz/60.004Hz	VESA
5	1027 x 768	60.000Khz/75.000Hz	VESA

User video timing specifications:

Mode	Resolution	H. freq. / V. freq	Standard
1	640 x 350	31.469Khz/70.090Hz	VGA
2	720 x 400	31.469Khz/70.085Hz	VGA
3	640 x 480	35.000Khz/66.667Hz	Macintosh
4	640 x 480	37.861Khz/72.809Hz	VESA
5	640 x 480	37.500Khz/75.000Hz	VESA
6	800 x 600	35.200Khz/56.000Hz	VESA
7	800 x 600	48.077Khz/72.188Hz	VESA
8	800 x 600	46.875Khz/75.000Hz	VESA
9	832 x 624	49.700Khz/75.000Hz	Macintosh
10	1024 x 768	56.476Khz/70.069Hz	VESA

TV system signal mode:
RF support:
WE: PAL B/G/D/K/I and SECAM L/L□/B/G /D/K .
CVBS/S-video: Support PAL, NTSC and SECAM colour system.
Comp video IN(YpbPr) : including 480i/p 50/60Hz,720p 50/60Hz,
1080i 50//59/60Hz,1080p 50//59/60Hz
HDMI IN : 480p, 576p, 720p 50/60Hz, 1080i 50/59/60Hz,
1080p 50/59/60Hz

For 19PFL4322/10

PC timing table

Mode	Resolution	H. freq. / V. freq	Standard
1	640 x 480	31.469Khz/59.940Hz	VGA
2	800 x 600	35.156Khz/56.250Hz	VESA
3	800 x 600	37.879Khz/60.317Hz	VESA
4	1024 x 768	48.363Khz/60.004Hz	VESA
5	1280 x 720	44.772kHz/59.855 Hz	CVT
6	1280 x 768	47.776kHz/59.87Hz	CVT
7	1360 x 768	47.712kHz/60.015Hz	CVT
8	1440 x 900	55.469kHz/59.901Hz	CVT

User video timing specifications:

Mode	Resolution	H. freq. / V. freq	Standard
1	640 x 350	31.469Khz/70.087Hz	VGA
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TV system signal mode:
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1080i 50//59/60Hz, 1080p 50//59/60Hz
HDMI IN : 480p, 576p, 720p 50/60Hz, 1080i 50/59/60Hz,
1080p 50/59/60Hz

For 20PFL4122/10

PC timing table

Mode	Resolution	H. freq. / V. freq	Standard
1	640 x 480	31.469Khz/59.940Hz	VGA
2	720 x 400	30.240Khz/66.667Hz	VGA

TV WE model

PRG	CH	Frequency Carriers		TV System	Pattern
		Video	Sound		
1	AU37	590.25MHz	595.75MHz	PAL B	Pure White
2	AU2	64.25MHz	69.75MHz	PAL B	Circle Pattern
3	E7	189.25MHz	194.75MHz	PAL B	Circle Pattern
4	G47	679.25MHz	684.75MHz	PAL G	Circle Pattern
5	I23	487.25MHz	493.75MHz	PAL I	Circle Pattern
6	E12	224.25MHz	229.75MHz	PAL B	Color Bar
7	AU7	182.25MHz	187.75MHz	PAL B	Color Bar
8	G68	847.25MHz	852.75MHz	PAL G	100% White
9	AU9	196.25MHz	201.75MHz	PAL B	Checkerboard
10	AU10	209.25 MHz	214.75 MHz	PAL B	Crosshatch
11	AU0	46.25MHz	51.75MHz	PAL B	Color Bar
12	AU2	64.25MHz	69.75MHz	PAL B	Color Bar
13	AU5	102.25 MHz	107.75 MHz	PAL B	Crosshatch
14	AU5A	138.25MHz	143.75MHz	PAL B	Color Bar
15	AU7	182.25MHz	187.75MHz	PAL B	Pure White
16	AU9	196.25MHz	201.75MHz	PAL B	Pure White
17	AU10	209.25MHz	214.75MHz	PAL B	Circle Pattern
18	I23	487.25MHz	493.75MHz	PAL I	Circle Pattern
19	G28	527.25MHz	532.75MHz	PAL G	Circle Pattern
20	AU37	590.25MHz	595.75MHz	PAL G	Circle Pattern
21	I40	623.25MHz	629.75MHz	PAL I	Color Bar
22	CH44	655.25MHz	661.75MHz	PAL DK	Color Bar
23	I60	783.25MHz	789.75MHz	PAL I	100% White
24	I66	831.25MHz	837.75MHz	PAL I	Checkerboard
25	K21	471.25 MHz	477.75 MHz	SEC K1	Crosshatch
28	G28	527.25MHz	532.75MHz	PAL G	Color Bar

Comp video input mode: 480i, 480p, 576i, 576p, 720p50, 720p59, 720p60, 1080i50, 1080i59, 1080i60, 1080p50, 1080p59, 1080p60

HDMI input mode

1	720x480p/59Hz, 60Hz,720x576p/50Hz,
2	1280X720p, 50Hz , 59Hz, 60Hz
3	1920X1080i, 50Hz, 59Hz, 60Hz
4	1920X1080p, 50Hz, 59Hz, 60Hz

1.1.2 Sound

Sound systems : Mono / Stereo / Virtual Surround
Maximum power : 2 x 3W

1.1.3 Miscellaneous

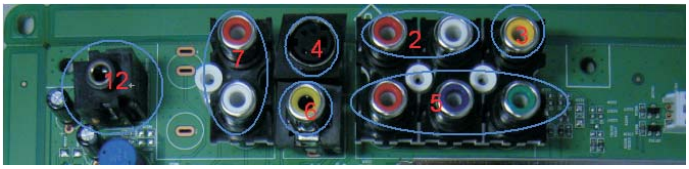
Power Supply
AC-input : 90V ~ 264VAC, 50/60±2Hz (15",19")
: 90V ~ 264VAC, 50/60±3Hz (20")
Power consumption : 35W/Max(at PC mode),35W/Max(at TV mode) with Audio. (15")
70W/Max(at PC mode),70W/Max(at TV mode) with Audio. (19")
Normal: (20")
1. PC Mode: TYP 60 W (with audio)
2. TV Mode: TYP 60 W (with audio)
Maximum: 65W (with audio) (20")
Power cord length 1.8m
Power cord type : European type and China type (15",19")
3 lead with earth plug, pluggable (20")
Power indicator : LED (On: Blue ,Sleeping mode: Red) (15")
LED (On: Blue ,Sleeping mode: Amber) (19")
LED (On: Blue, Standby mode: Amber) (20")
Auto power saving : < 2W (15",19")
VESA DPMS (20")

Ambient conditions
Temperature : 0 to40°C
Humidity : 10 to 90%

1.2 Connectors

1.2.1 I/O interface

1. Tuner: Multi-standard for WE model
2. Audio 1 IN : audio R/L(RCA jack) input
3. AV1 IN : Composite video input (CVBS)
4. S-video IN : S-video input
5. Comp video IN :YPbPr format input
6. AV2 IN: Composite video (CVBS) input
7. Audio 2 IN : Comp and AV2 audio R/L(RCA jack) input
8. Scart IN : YPbPr/CVBS with audio input and CVBS with audio line out
9. PC Audio IN: audio R/L(mini-jack).
10. PC IN: VGA input (D-SUB connectors)
11. HDMI : digital video and audio input
12. Earphone : earphone jack



1.2.2 PC mode signal type

a.Analog Video : 15 pin D-sub ,0.7 Vp-p linear, positive polarity & separate sync.(TTL level, positive or negative polarity)

b.Audio signal : 3.5mm stereo mini-jack
Level: Nominal : 0.5 V rms.
- Maximum : 1.5 V rms.
-Impedance > 10 kΩ.

c.Signal source: Pattern generator format as attachment table 1 to 12.
Reference generator : CHROMA 2200 or QuantumData 802R
TV mode signal type

RF Signal : Aerial input / 10mV(30-100dBuV)
Video signal : CVBS input (RCA jack) / 1Vpp (300mV-sync, 700mV-video.)
S video input / 1VppY-signal, +/-300mV C-signal
SCART input: CVBS、YPbPr signal (for WE model only)
Comp video in(YPbPr input)/ 1Vpp Y signal, +/-350mV Pb,Pr signal
HDMI:Digital interface with 4 channels TMDS signal
CVBS output (SCART line out) / 1Vpp (300mV-sync, 700mV-video.)
Audio signal : Audio (1) R/L for AV IN(AV and S-Video).
Level: - Nominal : 0.5 V rms.
- Maximum : 1.5 V rms.
- Impedance > 10 kΩ.
Audio (2) R/L for SCART IN
Level: - Nominal : 0.5 V rms.
- Maximum : 1.5 V rms.
- Impedance > 10 k Ω.
Audio (3) R/L for Comp video IN.
Level: - Nominal : 0.5 V rms.
-Maximum : 1.5 V rms.
-Impedance > 10 k Ω.

Audio (4) digital audio for HDMI Video IN.

Scart output: (for WE model only)

Video: CVBS output 1Vpp / Impedance : 75Ω.

Audio: R/L output (from CVBS)

Level: - Nominal : 0.5 V rms.
- Maximum : 1.5 V rms.
- Impedance < 1 k Ω.

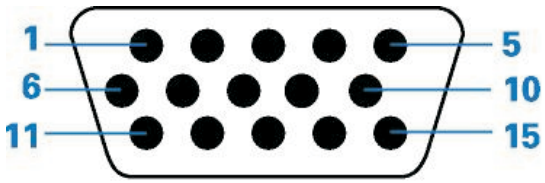
Headphone

Audio: R/L output -10mW at 32Ω.

3.5mm stereo jack with switch

Impedance is between 8 and 600 Ω.

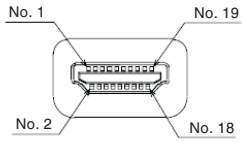
1.2.3 VGA Pin assignment



PIN No.	SIGNAL
1	Red video input
2	Green video input /SOG
3	Blue video input
4	GND
5	GND cable detect
6	Red video ground
7	Green video ground
8	Blue video ground
9	DDC +3.3V (or 5V)
10	Logic ground
11	GND
12	Serial data line (SDA)
13	H. Sync / H+V
14	V. Sync
15	Data clock line (SCL)

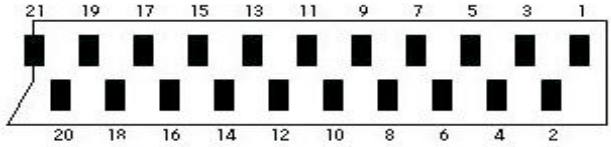
1.2.4 HDMI Pin assignment

Type A Connector



Pin No.	Description
1	RX2+
2	GND
3	RX2-
4	RX1+
5	GND
6	RX1-
7	RX0+
8	GND
9	RX0-
10	RXC+
11	GND
12	RXC-
13	CEC
14	NC
15	DDC clock
16	DDC data
17	GND
18	+5V POWER
19	Hot Plug Detect

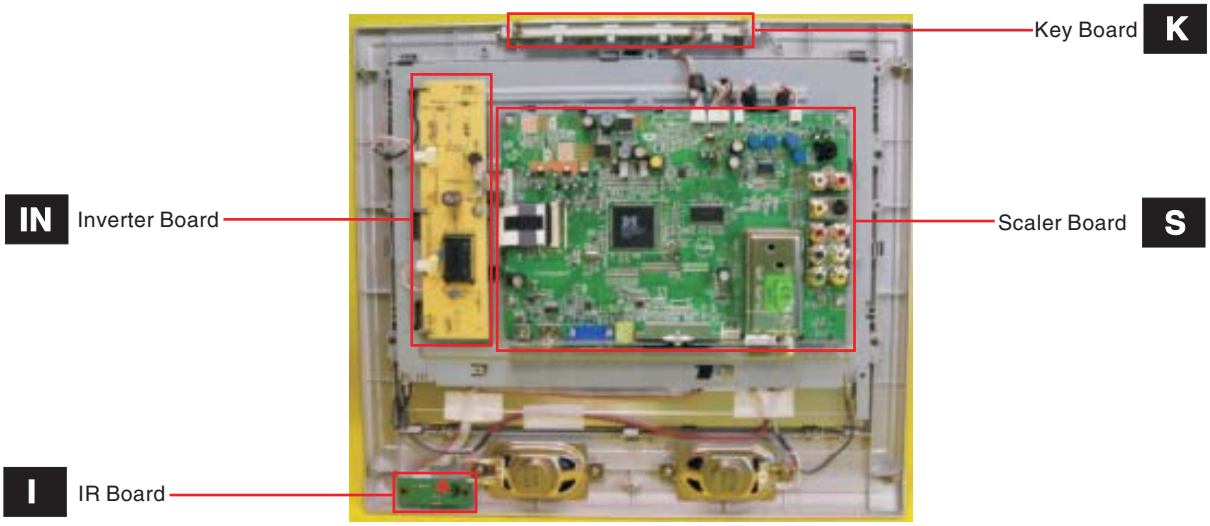
1.2.5 Scart



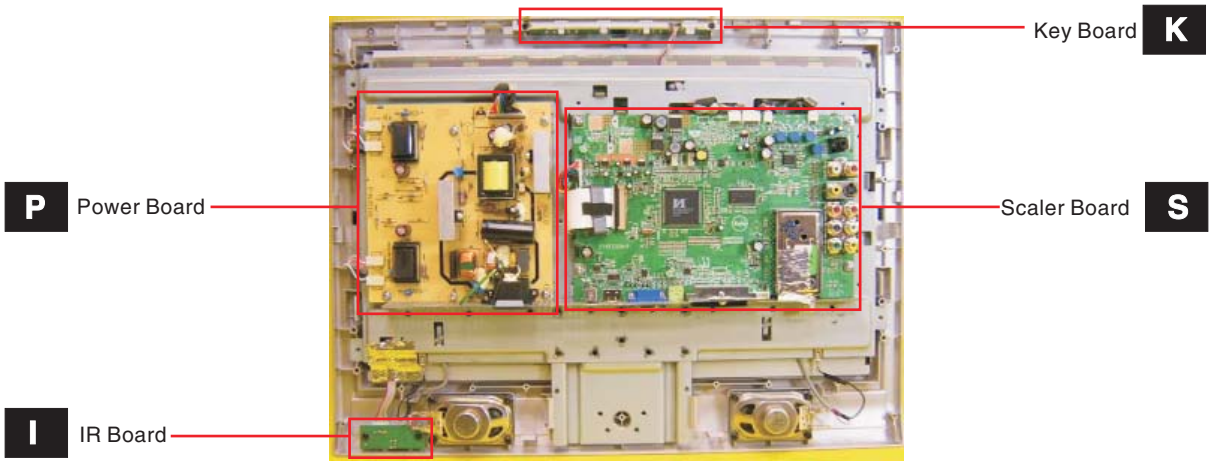
Pin	TV SCART
1	N/C
2	Right audio input
3	N/C
4	Audio ground
5	Blue ground
6	Left audio input
7	Blue output
8	0-2.5 volts (low) when: TV output 4.5-7.5 volts (High-to-6v) when: -inputting picture format setting is '16:9', 9-12 volts (high-to-12v) when: -inputing picture format setting is '4:3'
9	Green ground
10	N/C
11	Green output
12	N/C
13	Red ground
14	N/C
15	Red output
16	0 volt (low) when:- pin 8 of the TV scart is low or when: - Composite video signal 1-3 volts (high) when: - video input setting is 'RGB',
17	Composite video output ground
18	Composite video input ground
19	N/C
20	Composite video input
21	Ground

1.3 Chassis Overview

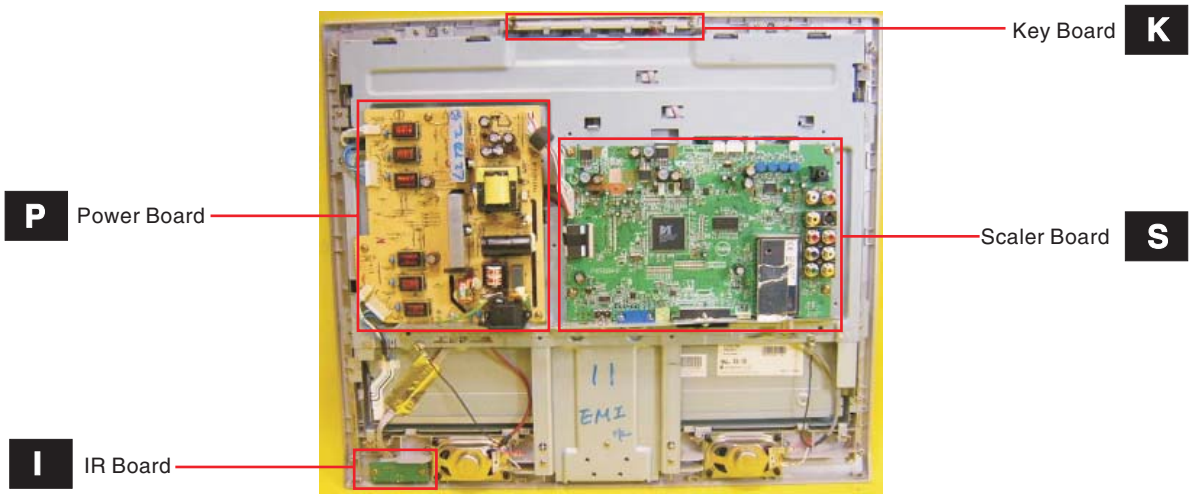
Type: 15PFL4122/10



Type: 19PFL4322/10



Type: 20PFL4122/10



2.Safety Instructions,Warnings,and Notes

Index of this chapter:
2.1 Safety instructions
2.2 Warnings
2.3 Notes

2.1 Safety Instructions

Safety regulations require the following during a repair:
- Connect set to the Mains/AC Power via an isolation transformer(>800VA)
- Replace safety components,indicated by the symbol⚠, only by components identical to the original ones.Any other component substitution(other than original type)may increase risk of fire or electrical shock hazard

Safety regulations require that after a repair,the set must be returned in its original condition.pay in particular attention to the following points:
- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC power lead for external damage.
- Check the strain relief of the Main/AC power cord for proper function.
- Check the electrical DC resistance between the pins of the Mains/AC Power plug and secondary side(only for sets that have a Mains/AC power isolated poer supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC power plug.\
  2.Set the Mains/AC Power switch to the "ON" position (keep the Mains/AC Power cord unplugged!)
  3.Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set.The reading should be between 4.5 Mohm and 12 Mohm.
  4.Switch "OFF" the set,and remove the wire between the two pins of the Mains/AC plug.
- Check the cabinet for defects,to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges(ESD). Careless handling during repair can redure life drastically.Make sure that,during repair, you are connected with same potential as the mass of the set by wristband ith resistance .Keep components and tools also at this same potential.Available EDS protection equipment:
  -Complete kitEDS3(small tablemat,wrisband,connection box ,extension cable and earth cable)4822 310 10671.
  -Wristband tester 4822 344 13999.
- Be careful suring measurements in the high voltage section.
- Never replace modues or other components while the unit is switched"ON".
- When you align the set,use plastic rather than metal tools.This will prevent any shurt circuits and danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (=tuner)ground(⏚),or hot ground(⏚), depending on the tested area of curcuitry.The voltages and waveforms shown in the diagrams are indicative.Measure them in the Service Default Mode(see chapter 5)with a colour bar signal and stereo sound(L:3 khz, R:1 kHz unless statedotehrwise)and picture carrier at 475.25 Mhz for PAL,or 61.25 MHZ for NTSC(channel 3).
- Where necessary,measure the waveforms and voltages with(┐┌) and without(✕)aerial signal.Measure the voltages in the power supply section both in normal operation(⏻) and in stand-by(⏻). These values are indicated by means of the approprate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists,are interchangeable per position with the semiconductors in the unit,irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories."Dolby", "Pro Logic" and the "double-D symbol",are trademarks of Dolby laboratories.

2.3.2 Schematic Notes

- All resistor values are ohms,and the value multiplier is often used to indicate the decimal point location(e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no munltiplier may be indicated with either an "E" or an "R"(e.g.220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads($u=x10^{-6}$),nano-farads9n=$x10^{-9}$),or pico-farads($p=x10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication(e.g. 2p2 indicates 2.2 pF).
- An "asterisk"(*) indicates component usage varies.Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore,always check this list when there is amy doubt.

2.3.3 Lead-free Solder

Philips CE is producing Lead-free sets (PBF) from 1.1.2005 onwards.

Idntification: The bottom line of a type gives a 14-digit serial number.Digial 5 and 6 refer to the production year,digits 7 and 8 refer to production week(inexample below it is 2007 week14)

Figure 2-1 Serial number example

Regardless of the special lead-free logo(which is not always indicated),one must treat all sets from this date onwards according to the rules as described below.

Figure 2-2 Lead-free logo

Due to lead-free technology some rules have to be respected by the workshop during a repair:

Use only lead-free soldering tin Philips SAC305 with order code 06622 149 00106.If lead-free solder paste is required please contact the manufacturer of your soldering equipment.In general,use of solder paste within workshops should be avioded because paste is not easy to store and to handle.
Use only adequate solder tools applicable for lead-free soldering tin.The solder tool must be able:
-To reach a solder-tip temperature of at least 400°C.
-To stabilise the adjusted temerature at the solder-tip
-To exchange solder-tips for different applications.
Adjust your solder tool so that a temperature of around 360°C -380°C is reached and stablilised at the solder joint.
Heating time of the solder-joint should not exceed~4sec.
Aviod temperatures above 400°C,otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed.
To aviod wear-out of tips,switch off unused equipment or reduce heat.
Mix of lead-free soldering tim/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes.If this cannot be avoided,carefully clear the solder-joint from old tin and re-solder with new tin.
Use only original spare -parts listed in the Service-Manuals. Not listed standed material(commodities)has to be purchased at external companies.
For sets produced before 1.1.2005,containing leaded soldering tin and components,all needed spare parts will be available till the end of the service period.For the repair of such sets nothing changes

In case of doubt whether the board is lead-free or not(or with mixed technologies),you can use the following method:
Always use the highest temperature to solder,when using SAC305(see also instructions below).
De-solder thoroughly(clean solder joints to avoid mix of two alloys).

2.3.4 Alternative BOM identification

In September 2005,Philips CE introduced a change in the way the serial number(or production number,see Figure 2-1)is composed.From this data on,the third digit in the serial number (example:AG2B0335000005) indicates the number of the Alternativ BOM(bill of Materials used for producing the sepcific model of TV set).It is possible that the same TV model on the market is produced with e.g. Two different types of displays, coming from two different O.E.M.s.
By looking at the third digit of the serial number,the serivce technician can see if there is more than one type of B.O.M. Used in theproduction of the TV set he is working with.He can used in the Commercial type Version Number of the TV set (e.g.20PFL4122/93),after which a screen will appear that gives information about the number of alternative B.O.M.s used.
If the third digit of serial nuber contains the number 1(example: AG1B0335000001),then there is only one B.O.M. Version of the TV set on the market.If tje third digit is a 2(example: AG2B033500001),then there are two different B.O.M.s.
Information about this is important for ordering the correct spare parts!
For the third digit,the number 1....9 and the characters A.....Z can be used,so in total:9 plus 26=35 different B.O.M.s can be indicated by the third digit of the serial number.

2.3.5 Board Level repair(BLR) or Component Level Repair(CLR)

If a board is defective,consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely,do not solder on the degective board.Otherwise,it cannot be returned to the O.E.M. Supplier for back charging!

2.3.6 Practical Service precautions

It makes sense to avoid exposure to electrical shock.
While some sources are expected to have a possible dangerous impact,others of quite high potential are of limited current and are sometimes held in less regard.
Always respect voltages.While some may not be dangerous in themselves,they can cause unexpected reactions that are best avoided.Before reaching into a powered TV set,it is best to test the high voltage insulation.It is easy to do,and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

PC MODE			
1st Layer	2nd Layer	3rd Layer	
Picture			
	Color temp	Normal Warm Cool	
	Brightness Contrast		
	Auto adjust	Yes	
	Manual adjust	Phase Clock Horizontal Vertical	
Sound			
	Smart sound	Personal Speech Music Movie Mulitimedia	
	Settings	Treble Bass Balance	
	Virtual surround	On Off	
Features			
	Picture format	Full screen 4:3	
Install			
	Language	English	
	Factory reset	No Yes	

TV / AV/ S-VIDEO / HD MODE				
1st layer	2nd layer	3rd layer	4th layer	5th layer
Picture				
	Smart picture	Personal Rich Nature Soft Multimedia		
	Contrast Brightness Color Sharpness Tint			
	Color temp	Normal Warm Cool		
	Picture format	Super zoom 4:3 Movie expand 14:9 Movie expand 16:9 16:9 subtitle Widescreen		

Sound				
	Smart sound	Personal Speech Music Movie Mulitimedia		
	Settings	Treble Bass Balance		
	Virtual surround	On Off		
Features				
	Timer	Clock Start time Stop time Sleep timer		
	NR	On Off		
	Auto lock	Lock program Change code Clear all	 Yes On Off	
	Source list	TV HDMI Comp video Scart S-video AV 1 AV 2 PC		
Install				
	Language	English		
	Auto store	Start ?	Auto store Please wait Prog. found Frequency	
	Manual store	Manual store Prog. no Finetune	MHz Start ?	
		Store	Store ? Stored	
	Channel setting	Channel edit	Channel Skipped	 Active Skipped
		Channel swap	From To Exchange	 Exchange ? Exchanged
		Name edit	Channel Name	
		Channel sort	Sort ?	Sorting. . . . . . Sort complete
	Factory reset	No Yes		

4. Mechanical Instructions

Index of this chapter:
4.1 Assy/Panel Removal
4.2 Set Re-assembly

4.1 Assy/Panel Removal

Note:Please put your mechine on a soft material to avoid to scrape panel when you disassemble it.

Front view

Fig.1

Back view

Fig.2

Step 1. Remove the Base.

Remove the 4 screws as Fig.3.

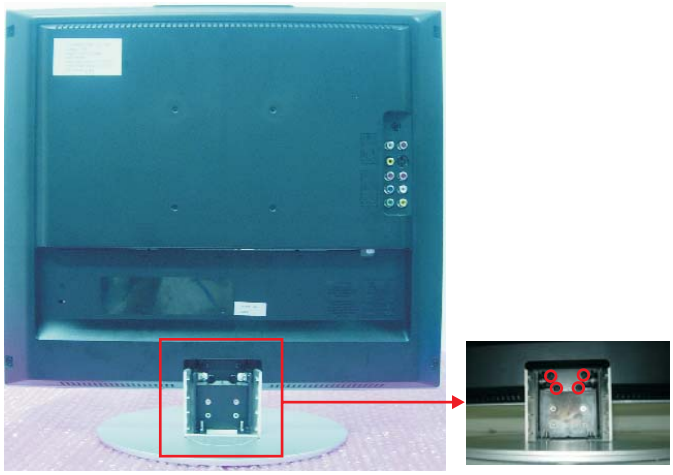


Fig.3

Step 2. Remove the Back cover and SHIELD-MAIN as Fig.4~5.

a. Remove the 4 screws, then remove the back cover as Fig.4.
b. Remove the 5 screws , then remove SHIELD-MAIN as Fig.5.

Fig.4

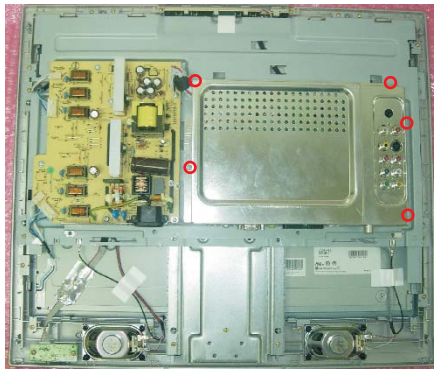


Fig.5

Step 3. Remove the Scaler, Power, IR and Key as Fig.6.

a. Remove the 7 screws and disconnect the 6 cables to remove the scaler board .
b. Remove the 7 screws and disconnect the 5 cables to remove the Power board.
c. Remove the 2 screws and disconnect the 1 cable to remove the IR board.
d. Remove the 2 screws and disconnect the 1 cable to remove the Key board.

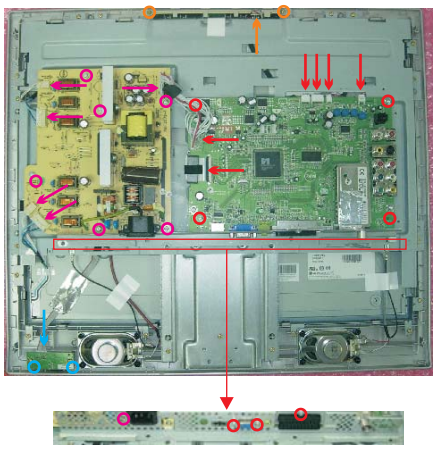


Fig.6

Step 4. Remove the Front bezel as Fig.7.

a. Remove the 27 screws to remove the Frame assy as Fig.7.

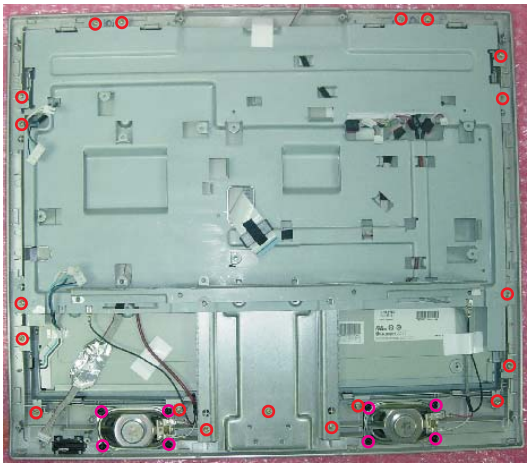


Fig.7

Step 5. Remove the Frame assy as Fig.8~9.

a. Remove the 4 screws as Fig.8.
b. Remove the Frame assy as Fig.9.
c. Remove the Datatransfer board as Fig.10.

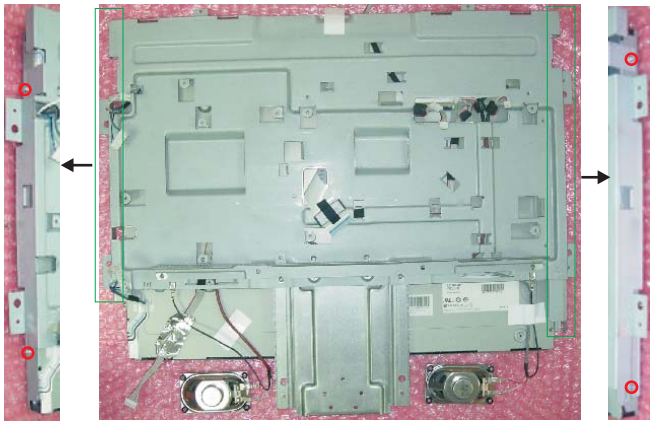


Fig.8

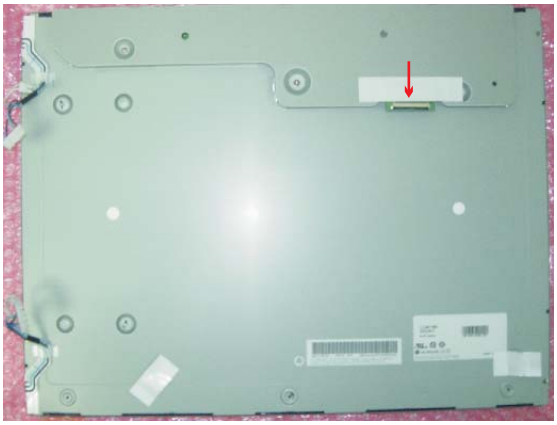


Fig.9

Fig.10

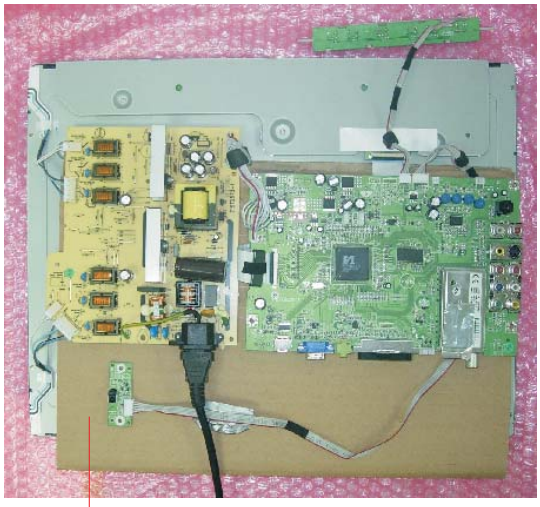


Fig.11

Insulation material

4.2 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:
a. While re-assembling, make sure that all cables are placed and connected in their original position.
b. Pay special attention not to damage the EMC foams at the SSB shielding. Check that EMC foams are put correctly on their places.

****
In warranty, it is not allowed to disassembly the LCD panel, even the backlight unit defect.

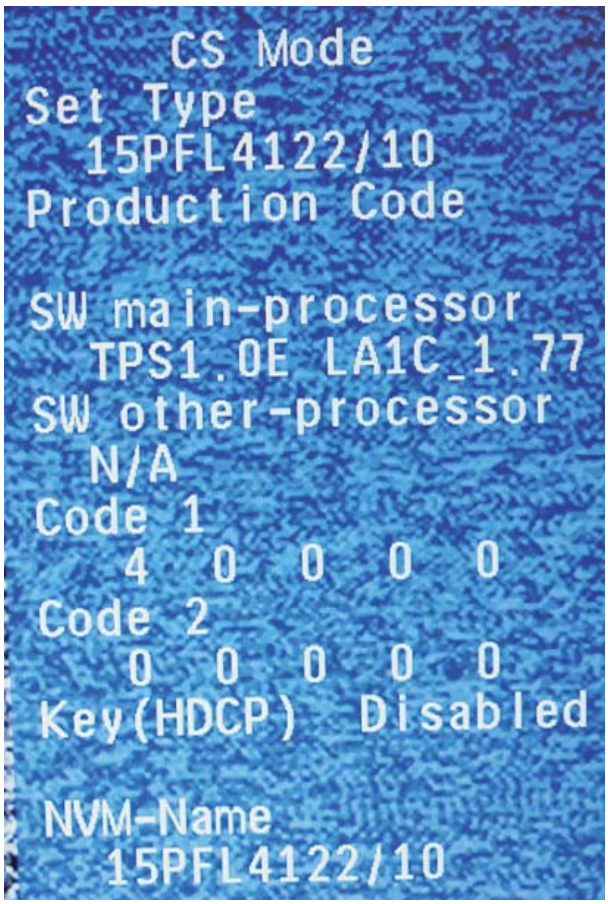
Out of warranty, the replacment of backlight unit is a correct way when the defect is cused by backlight (CCFL,Lamp).
****

5. Service Modes, Error Codes and Fault Finding

index of this chapter:
5.1 CSM
5.2 Factory Mode
5.3 Repair Flow Chart

5.1 CSM

It can display CSM windows message when press 1-2 3-6 5-4 on the button (RC) remote control in normal operation mode.
The following information is displayed on screen:



Set type:
Model type would be displayed on this item. E.g. 15PFL4122/10, 19PFL4322/10 or 20PFL4122/10.

Production code:
S/N would be displayed on this item.

SW main-processor:
Firmware version would be displayed on this item. E.g. 1.77 is the version.

SW other-processor:
N/A

Code 1:
5 last logged errors.

Code 2:
5 first logged errors.

Error code	Event
0x01	Audio decoder error
0x02	IIC bus error
0x03	Tuner error
0x04	NVRAM error
0x05	Scaler chip error

Key (HDCP):
HDCP key valid or invalid status would be displayed on this item.

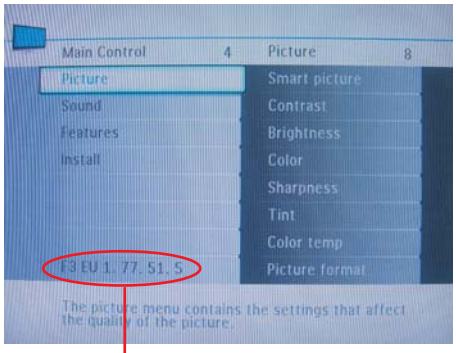
NVM-Name:
Same as set type

Software naming, version
19PFL4322/10 TPS1.0E LA1A_,SWMainVersion,
15PFL4122/10 TPS1.0E LA1C_,SWMainVersion,
20PFL4122/10 TPS1.0E LA1C_,SWMainVersion,

1. Press "Menu" to enter the OSD menu as Fig 1.

5.2 Factory Mode

Press "Menu062596 " on remote control then Press "Up " or "Down " button to move cursor to bottom item and then press "OK " button to enter factory mode.



Factory indicate

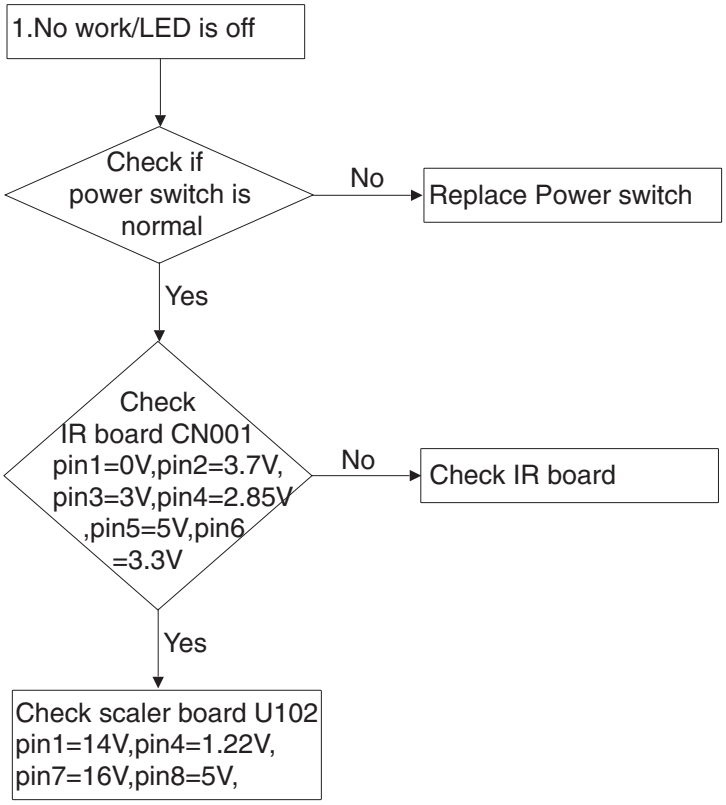
For white balance alignment

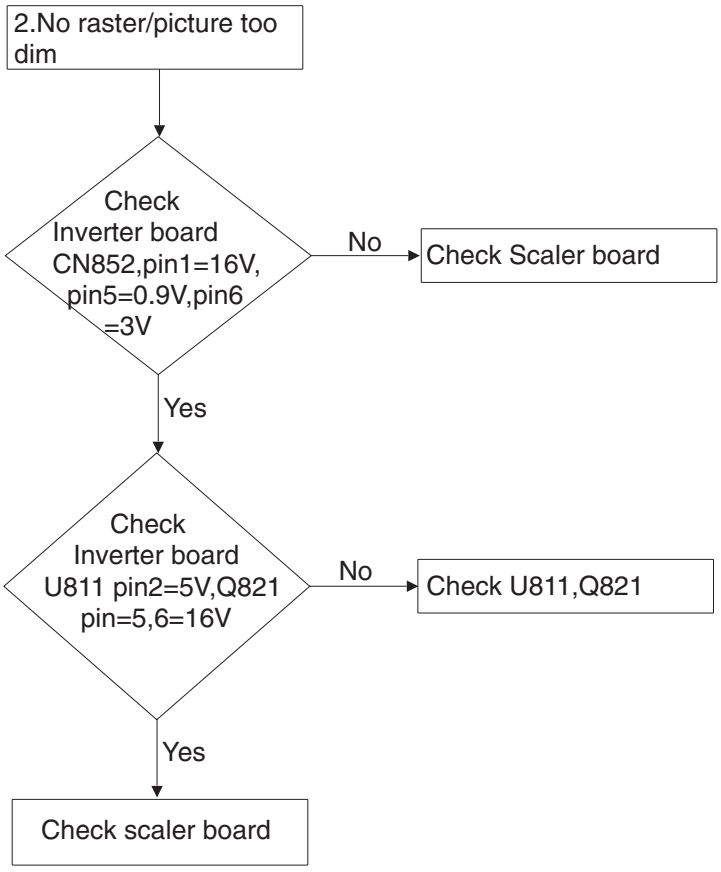
For auto color adjustment

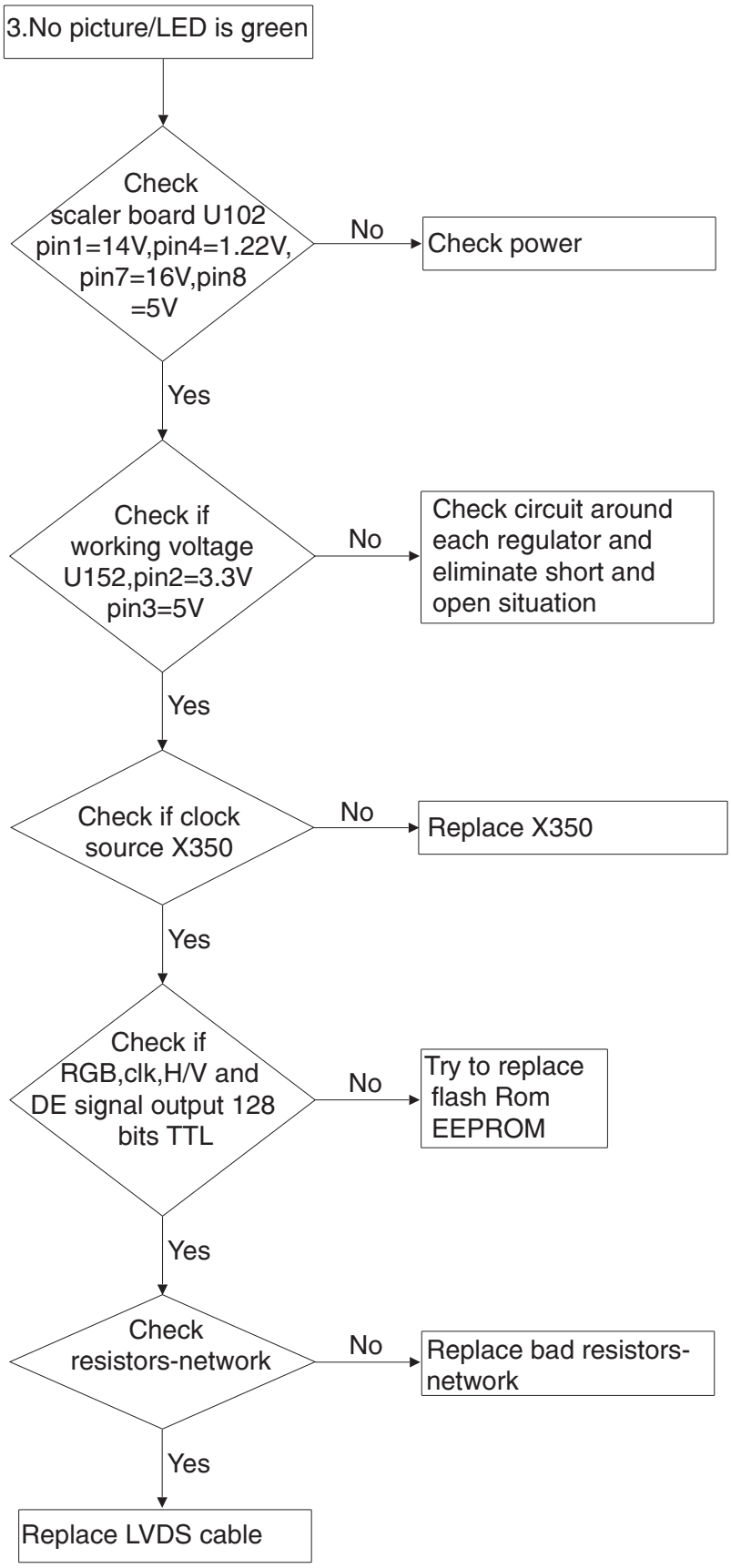
For design only, please don't adjust it.

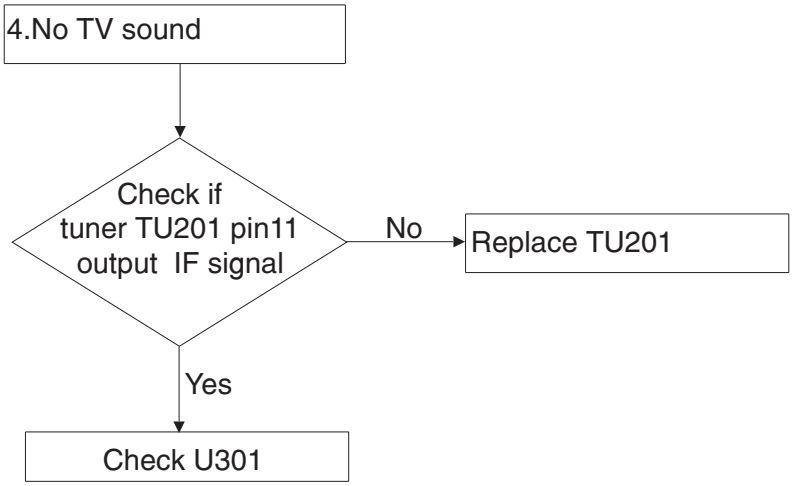
Use ▲ or ▼ to select the item that you want to change. Use ► and ◄ to change the value. When you finish to set , use ▲ or ▼ to select " Save " and press " OK " to save your setup. Then use ▲ or ▼ to select " exit " and press "Menu " to leave factory mode.

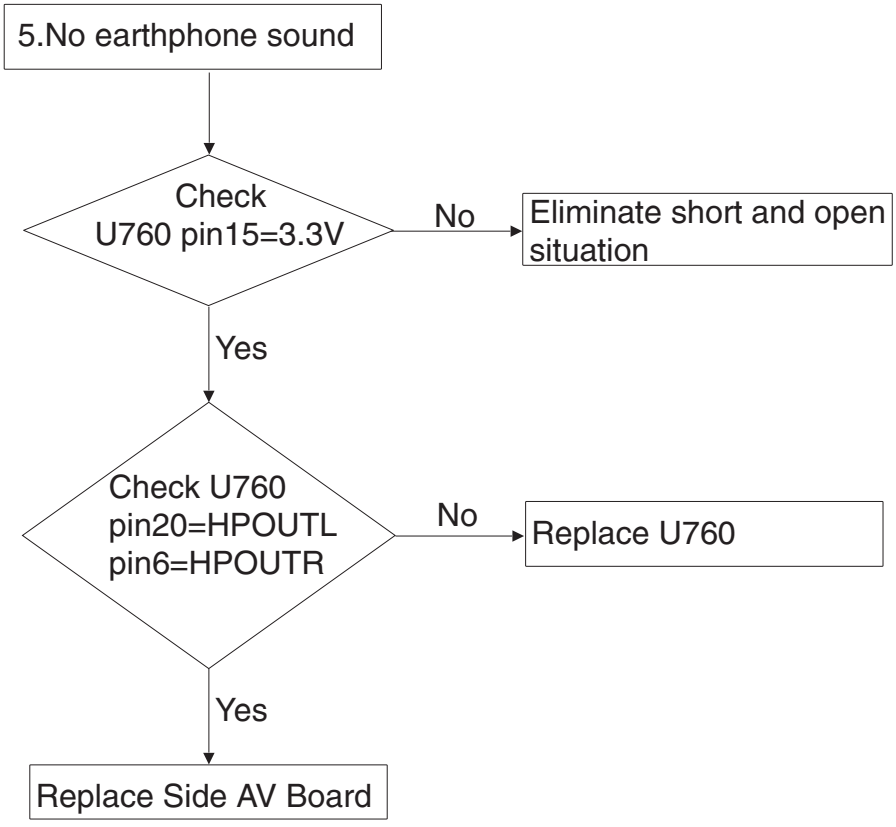
5.3 Repair flow chart

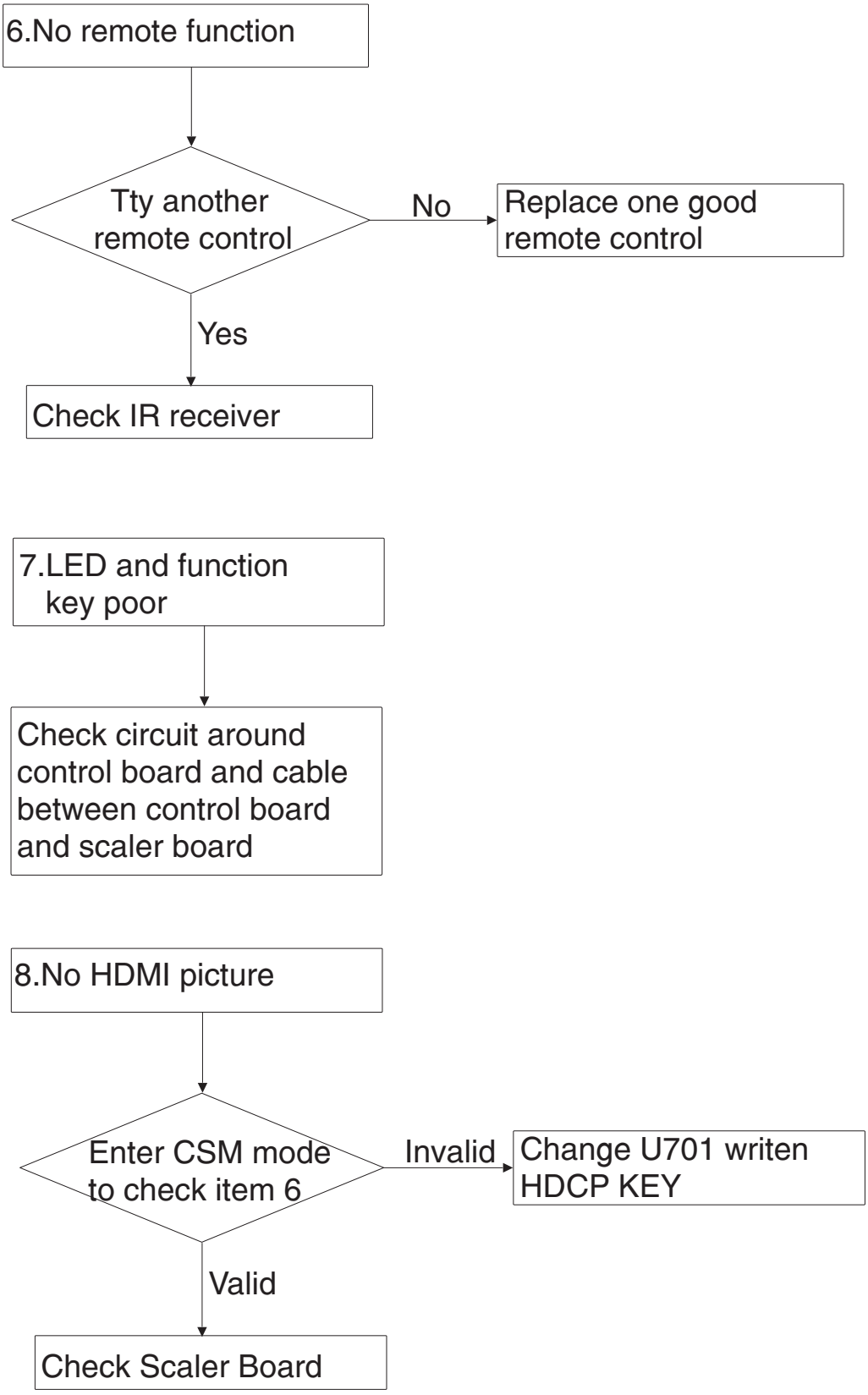





3.No picture/LED is green
Check scaler board U102 pin1=14V,pin4=1.22V, pin7=16V,pin8 =5V
No
Check power
Yes
Check if working voltage U152,pin2=3.3V pin3=5V
No
Check circuit around each regulator and eliminate short and open situation
Yes
Check if clock source X350
No
Replace X350
Yes
Check if RGB,clk,H/V and DE signal output 128 bits TTL
No
Try to replace flash Rom EEPROM
Yes
Check resistors-network
No
Replace bad resistors-network
Yes
Replace LVDS cable


4.No TV sound
Check if
tuner TU201 pin11
output IF signal
No
Replace TU201
Yes
Check U301


5.No earthphone sound
Check
U760 pin15=3.3V
No
Eliminate short and open
situation
Yes
Check U760
pin20=HPOUTL
pin6=HPOUTR
No
Replace U760
Yes
Replace Side AV Board

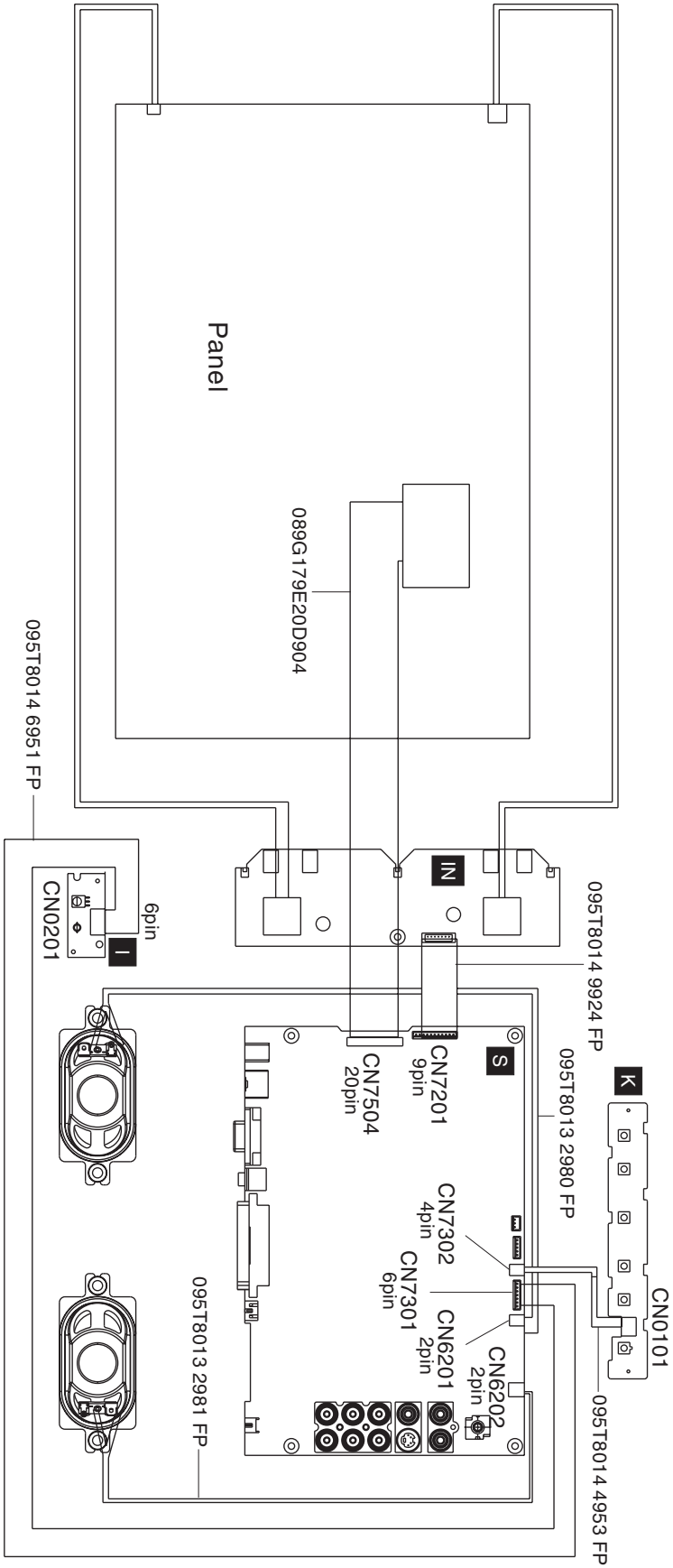

6.No remote function
Tty another remote control
No
Replace one good remote control
Yes
Check IR receiver
7.LED and function key poor
Check circuit around control board and cable between control board and scaler board
8.No HDMI picture
Enter CSM mode to check item 6
Invalid
Change U701 writen HDCP KEY
Valid
Check Scaler Board

6. Block Diagram

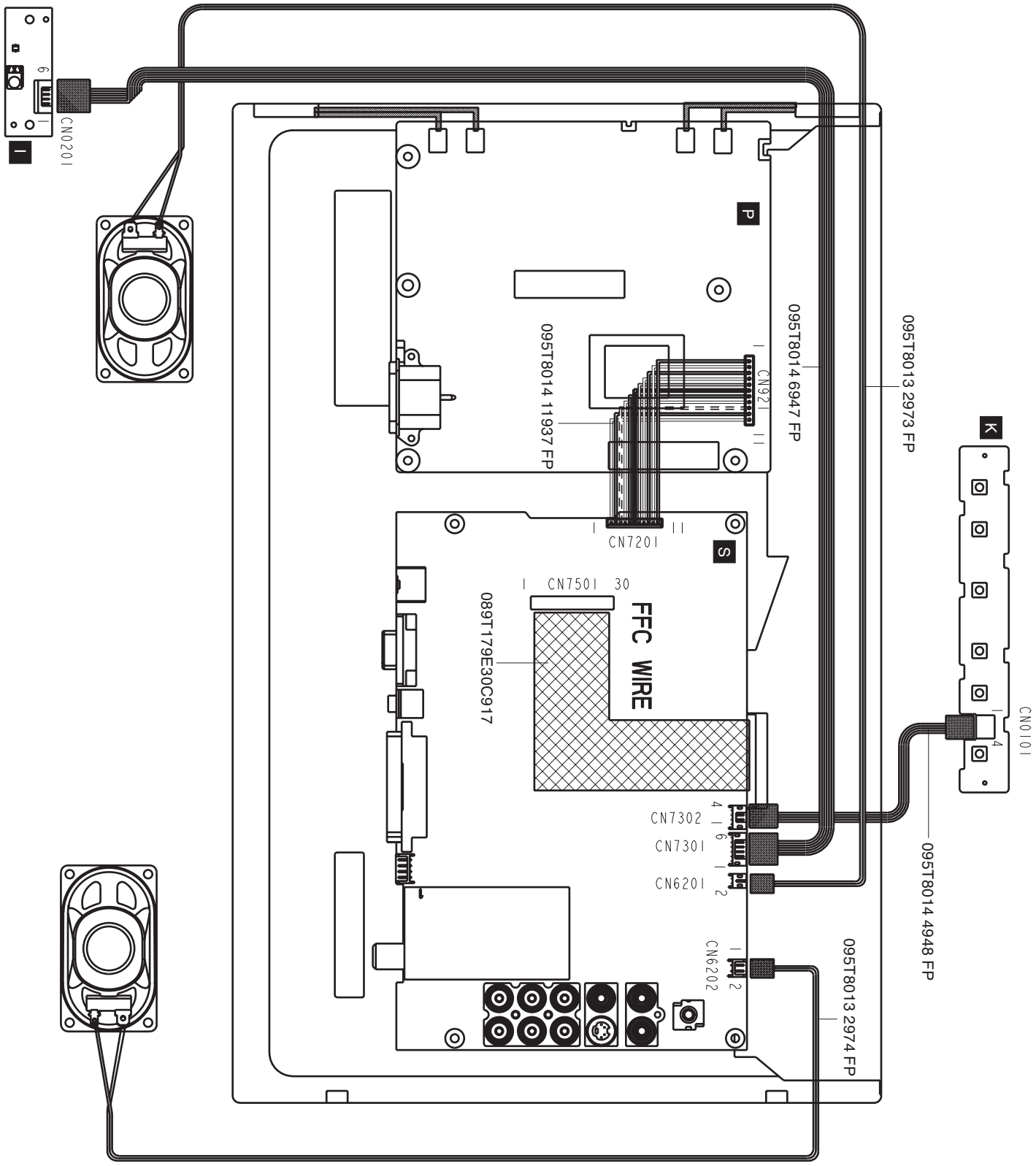
Index of this chapter:
6.1 Wiring Diagram
6.2 Block Diagram

Wiring Diagram

Type: 15PFL4122/10

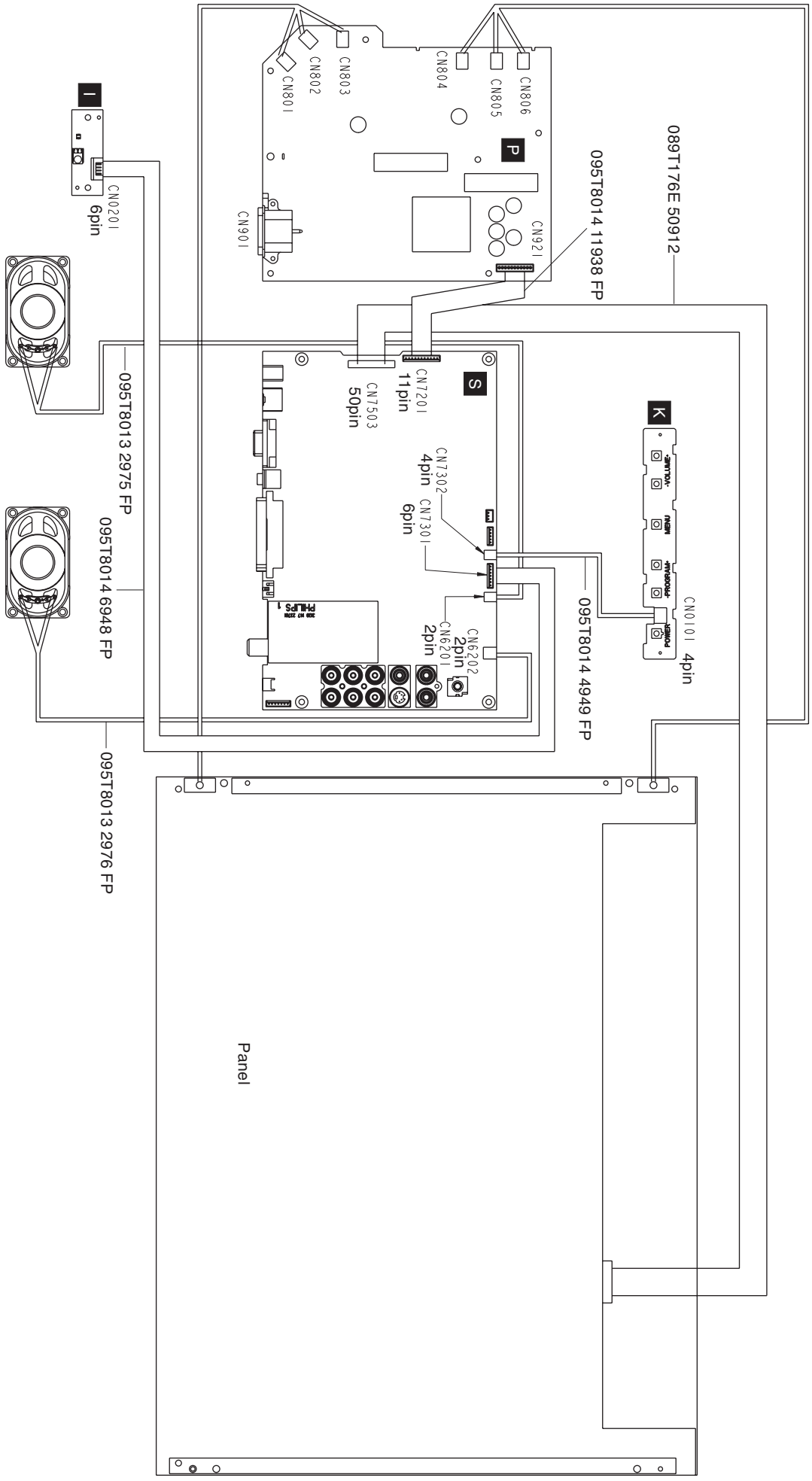


Type: 19PFL4322/10



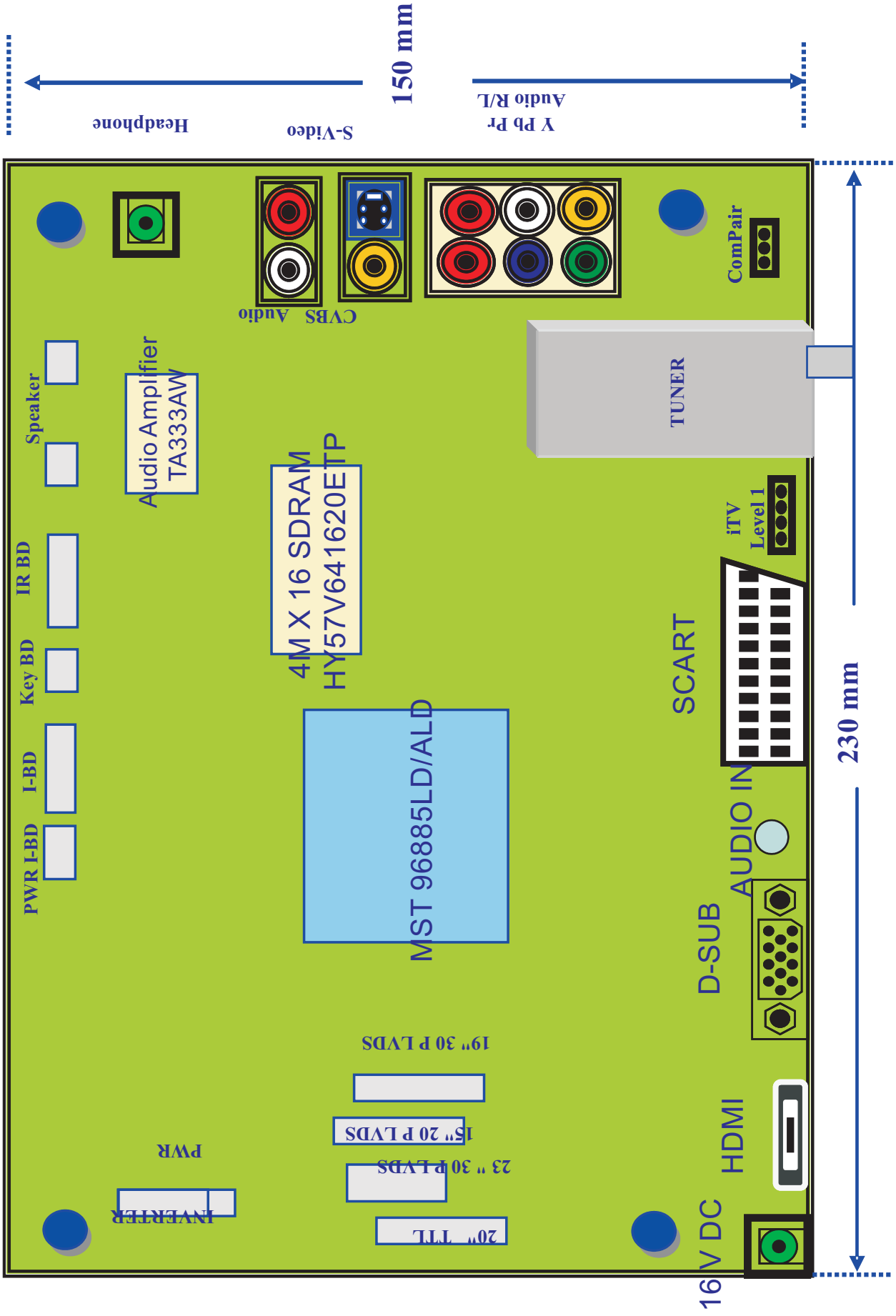
6. Block Diagram

Type: 20PFL4122/10

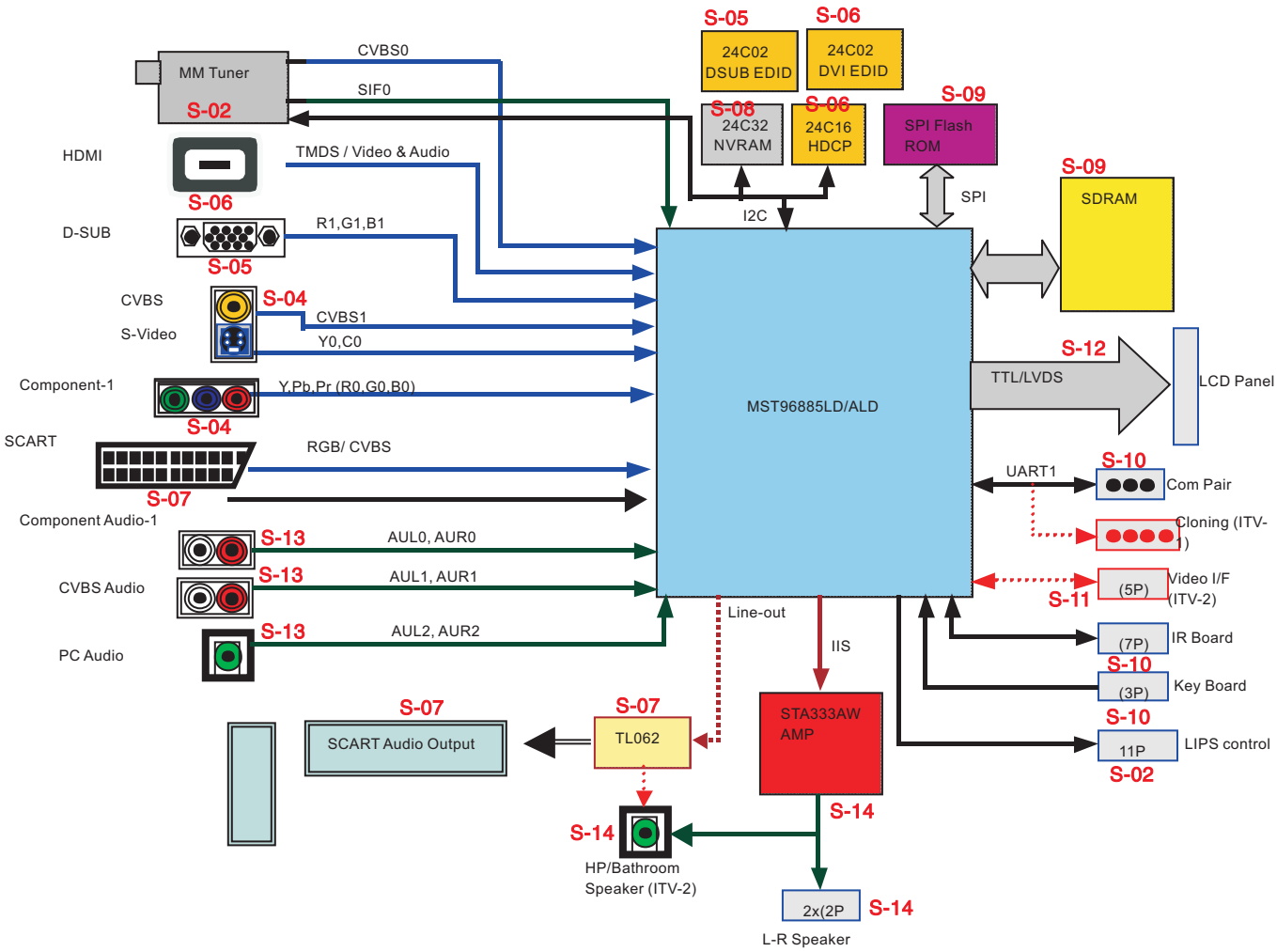


6.2 Block Daigram

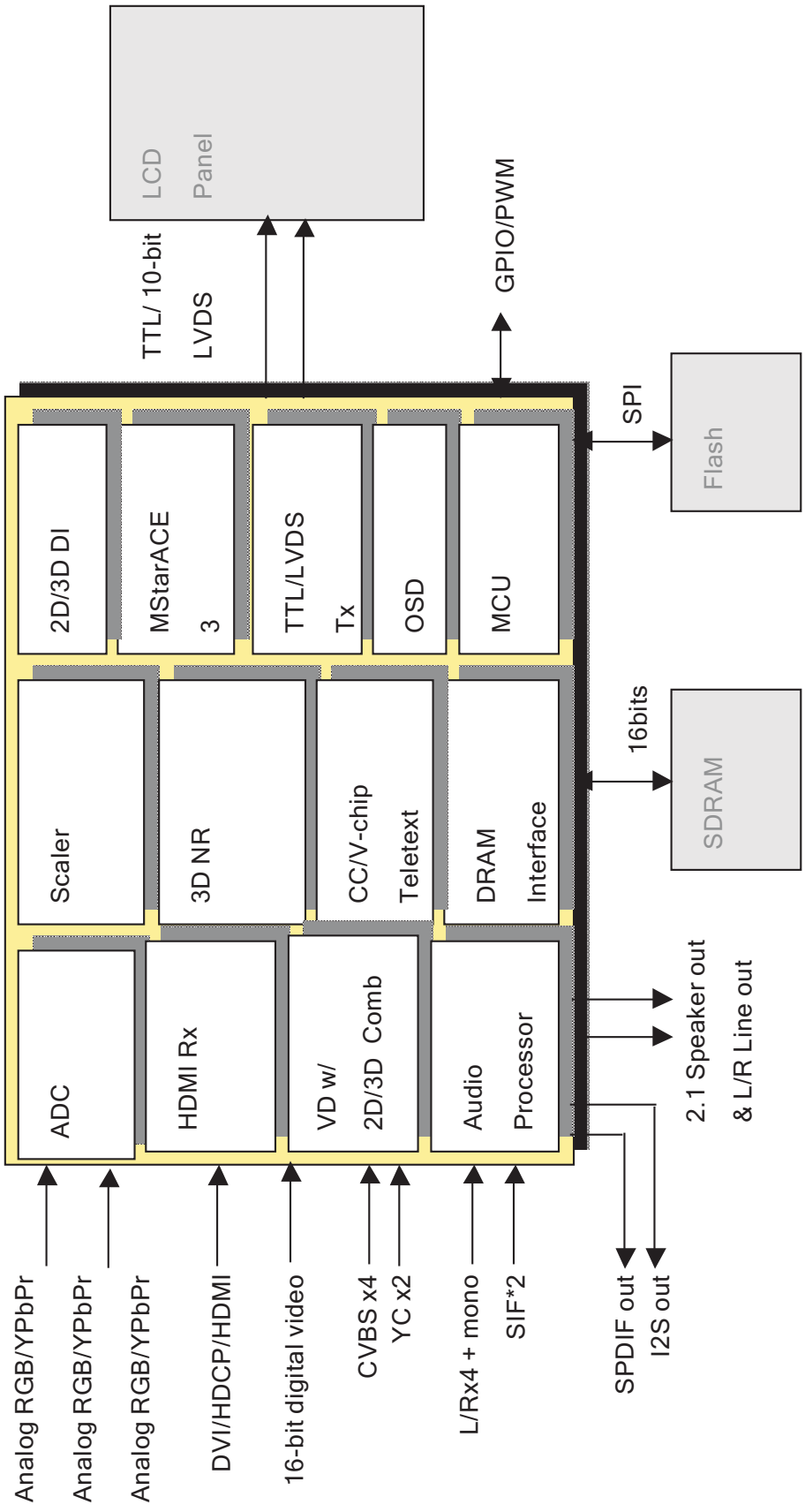
15" 20" 19W" Model Scalar Board PCB Layout



15" 20"19W" Europe - System Block Diagram

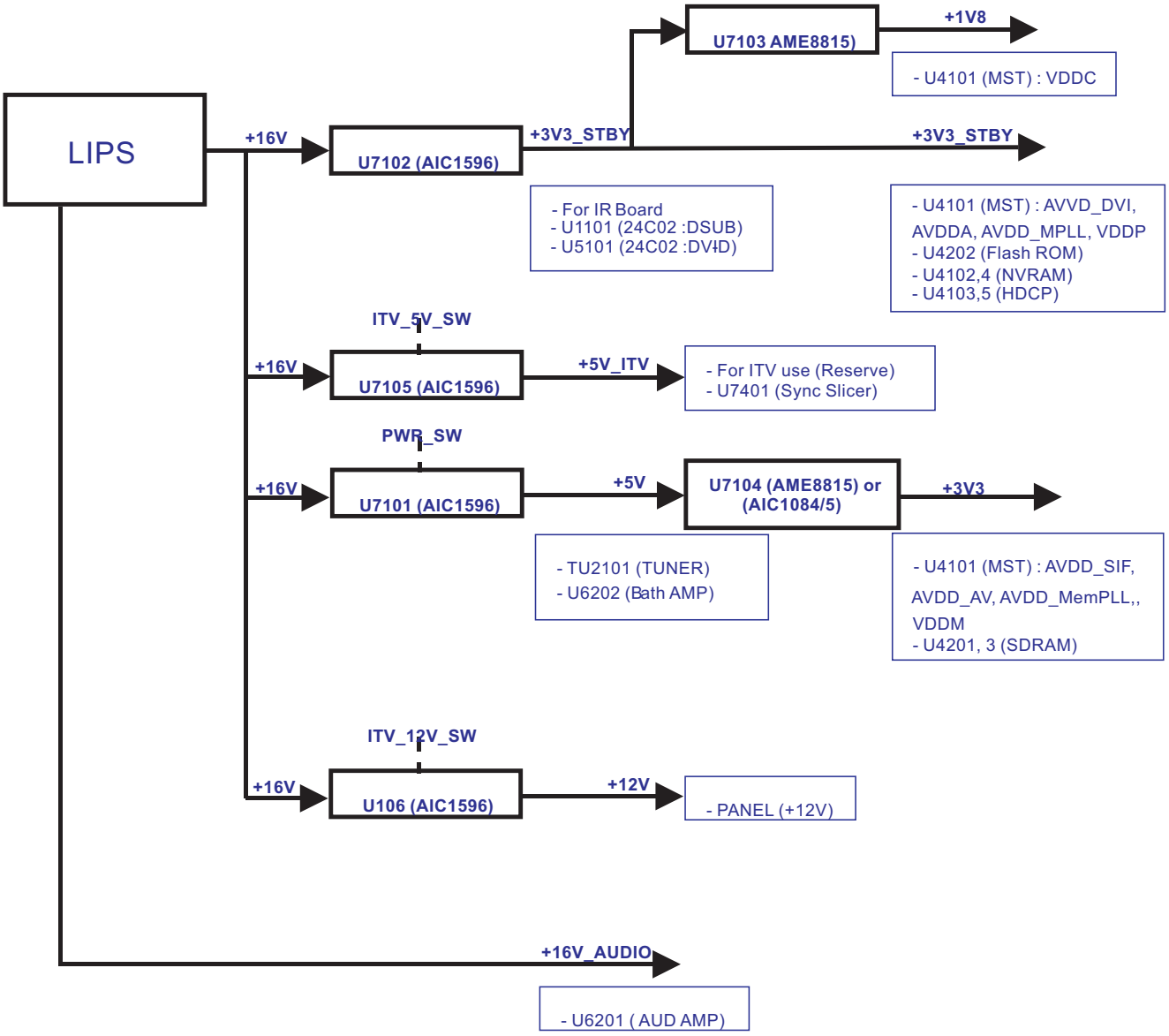


Function Diagram MST96885LD/ALD

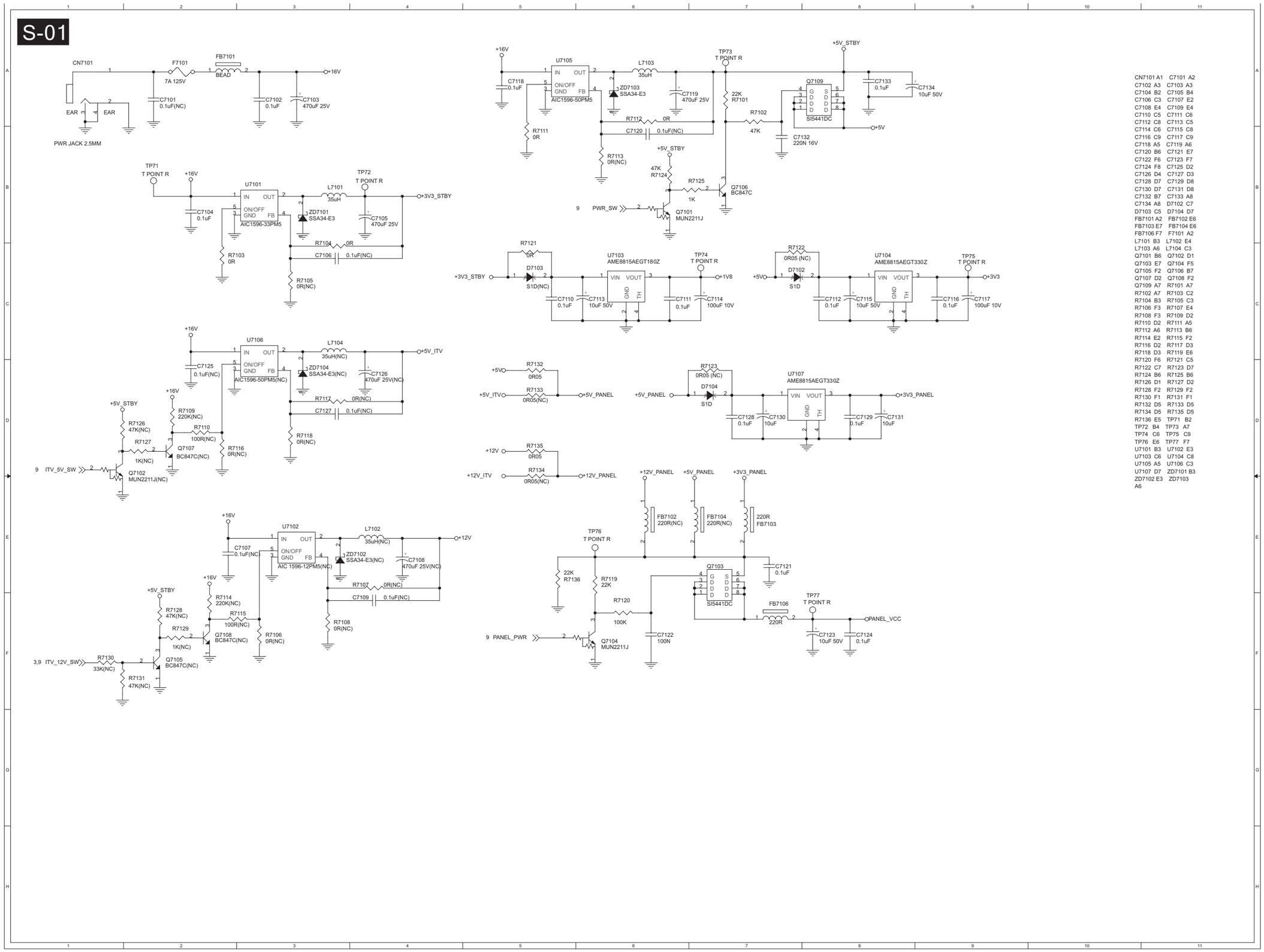


6. Block Diagram

Power Management



Scaler Board Schematic Diagram-DC-DC POWER

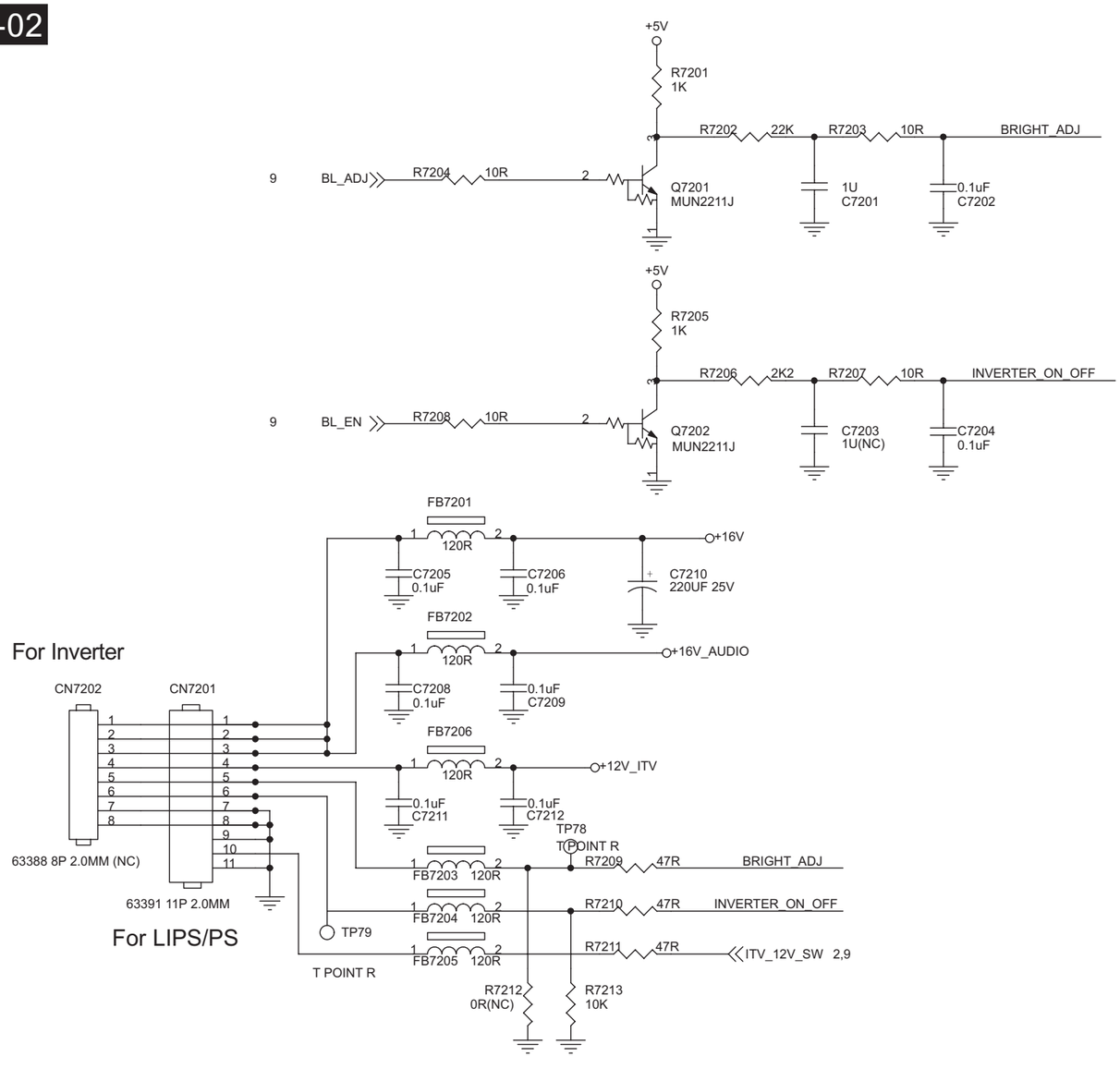


CN7101 A1 C7101 A2
C7102 A3 C7103 A3
C7104 B2 C7105 B4
C7106 C3 C7107 E2
C7108 E4 C7109 E4
C7110 C5 C7111 C6
C7112 C8 C7113 C5
C7114 C6 C7115 C8
C7116 C9 C7117 C9
C7118 A5 C7119 A6
C7120 B6 C7121 E7
C7122 F6 C7123 F7
C7124 F8 C7125 D2
C7126 D4 C7127 D3
C7128 D7 C7129 D8
C7130 D7 C7131 D8
C7132 B7 C7133 A8
C7134 A8 D7102 C7
D7103 C5 D7104 D7
FB7101 A2 FB7102 E6
FB7103 E7 FB7104 E6
FB7106 F7 F7101 A2
L7101 B3 L7102 E4
L7103 A6 L7104 C3
Q7101 B6 Q7102 D1
Q7103 E7 Q7104 F5
Q7105 F2 Q7106 B7
Q7107 D2 Q7108 F2
Q7109 A7 R7101 A7
R7102 A7 R7103 C2
R7104 B3 R7105 C3
R7106 F3 R7107 E4
R7108 F3 R7109 D2
R7110 D2 R7111 A5
R7112 A6 R7113 B6
R7114 E2 R7115 F2
R7116 D2 R7117 D3
R7118 D3 R7119 E6
R7120 F6 R7121 C5
R7122 C7 R7123 D7
R7124 B6 R7125 B6
R7126 D1 R7127 D2
R7128 F2 R7129 F2
R7130 F1 R7131 F1
R7132 D5 R7133 D5
R7134 D5 R7135 D5
R7136 E5 TP71 B2
TP72 B4 TP73 A7
TP74 C6 TP75 C9
TP76 E6 TP77 F7
U7101 B3 U7102 E3
U7103 C6 U7104 C8
U7105 A5 U7106 C3
U7107 D7 ZD7101 B3
ZD7102 E3 ZD7103 A6

7. Circuit Diagrams and PWB Layouts

Scaler Board Schematic Daigram-LIPS & INVERTER I/F

S-02



CN7201 C1
CN7202 C1
C7201 A4
C7202 A4
C7203 B4
C7204 B4
C7205 C2
C7206 C3
C7208 C2
C7209 C3
C7210 C3
C7211 C2
C7212 C3
FB7201 B2
FB7202 C2
FB7203 D2
FB7204 D2
FB7205 D2
FB7206 C2
Q7201 A3
Q7202 B3
R7201 A3
R7202 A3
R7203 A4
R7204 A2
R7205 B3
R7206 B3
R7207 B4
R7208 B2
R7209 D3
R7210 D3
R7211 D3
R7212 D3
R7213 D3
TP78 D3
TP79 D2

Scaler Board Schematic Diagram-TUNER

S-03

TU2101

ANT IN

N.C. N.C SCL SDA AS_TU NC AS_IF 2ND IF SOUND CVBS +5V,IF AF O/P

TH1 15
TH2 16
TH3 17
TH4 18

1 2 3 4 5 6 9 10 11 12 13 14

9,12,15 I2C_SCL — R2105 47R

9,12,15 I2C_SDA — R2106 47R

R2103 0R

R2107 0R(NC)

C2112 22P

C2113 22P

C2108 0.1uF

C2114 0.1uF

L2101 22uH(NC)

FB2102 100R

C2110 1000uF 16V

C2111 0.1uF

+5V

TV_CVBS — R2113 0R — TP20 T POINT R — R2102 47R C2102 47N — TUNER_CVBS 9

R2104 75R 1%

C2103 330P(NC)

C2104 330P(NC)

TV_SIF — TP21 T POINT R — R2108 0R C2105 0.1uF — SIFP0 9

R2109 2K2

22P C2106

R2110 0R C2107 0.1uF — SIFM0 9

MONO R2111 10K(NC) — C2109 0.1uF(NC) — AUMONO 9

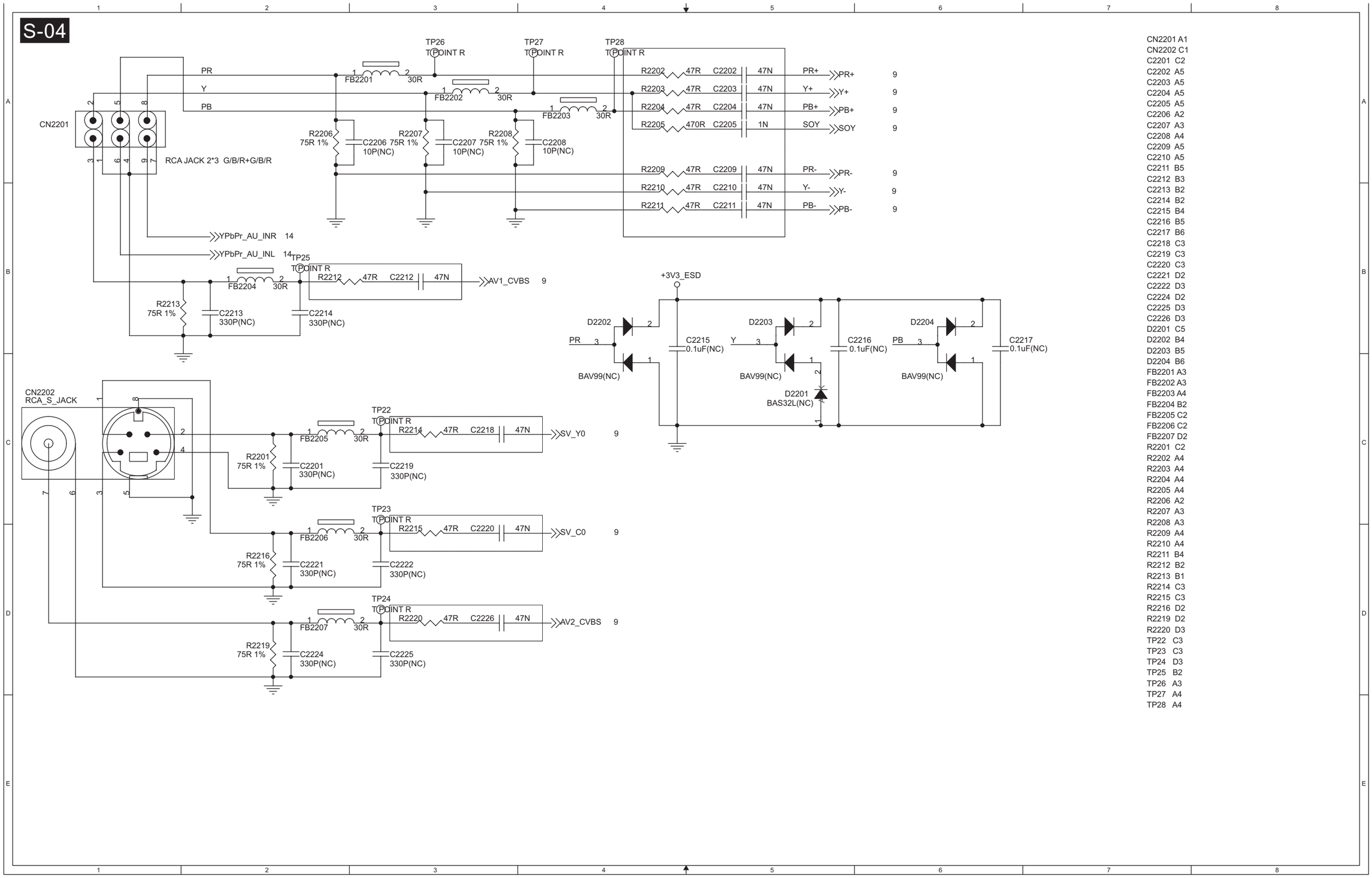
R2112 10K(NC)

C2101 100P(NC)

C2101 C5
C2102 B6
C2103 B4
C2104 B5
C2105 B6
C2106 B5
C2107 B6
C2108 C2
C2109 C6
C2110 C3
C2111 C3
C2112 B2
C2113 B2
C2114 B3
FB2102 C3
L2101 C3
R2102 B5
R2103 B3
R2104 B4
R2105 B1
R2106 B1
R2107 B2
R2108 B5
R2109 B4
R2110 B5
R2111 C4
R2112 C5
R2113 B5
TP20 B5
TP21 B5
TU2101 A1

7. Circuit Diagrams and PWB Layouts

Scaler Board Schematic Daigram- VIDEO INPUTS



CN2201 A1
CN2202 C1
C2201 C2
C2202 A5
C2203 A5
C2204 A5
C2205 A5
C2206 A2
C2207 A3
C2208 A4
C2209 A5
C2210 A5
C2211 B5
C2212 B3
C2213 B2
C2214 B2
C2215 B4
C2216 B5
C2217 B6
C2218 C3
C2219 C3
C2220 C3
C2221 D2
C2222 D3
C2224 D2
C2225 D3
C2226 D3
D2201 C5
D2202 B4
D2203 B5
D2204 B6
FB2201 A3
FB2202 A3
FB2203 A4
FB2204 B2
FB2205 C2
FB2206 C2
FB2207 D2
R2201 C2
R2202 A4
R2203 A4
R2204 A4
R2205 A4
R2206 A2
R2207 A3
R2208 A3
R2209 A4
R2210 A4
R2211 B4
R2212 B2
R2213 B1
R2214 C3
R2215 C3
R2216 D2
R2219 D2
R2220 D3
TP22 C3
TP23 C3
TP24 D3
TP25 B2
TP26 A3
TP27 A4
TP28 A4